

REMARKS

Favorable reconsideration of this application in view of the remarks to follow is respectfully requested. Since the present Response raises no new issues, and in any event places, the application in better condition for consideration on appeal, entry thereof is respectfully requested.

In the present Office Action, Claims 1, 3-7, 11-14 and 29-32 stand rejected under 35 U.S.C. §112, first paragraph, as allegedly failing to comply with the written description requirement. Specifically, there is allegedly no support for the previously added limitation that a *bonding interface is present between the semiconducting or non-semi-conducting substrate and the buried insulator layer.*

In order to advance prosecution of the instant application, applicants have cancelled the previous added limitation from Claim 1 of the present application. Applicants have further amended Claim 1 to positively recite that intermediate adhesion layer provides a bond between said buried insulator layer and said Ge-containing layer and eliminates Ge-oxide from said wafer. Support for this amendment to Claim 1 is found throughout the originally filed specification. See, for example, paragraphs [0039]-[0043].

Applicants have also amended Claim 1 to positively recite that the Ge-containing layer represents the uppermost layer of the wafer. Support for this amendment to Claim 1 is found in FIG. 1 as well as paragraph [0010].

Applicants observe that the above amendments to Claim 1 do not raise any new issues. Rather, the amendments to Claim 1 emphasize the function of the intermediate adhesion layer which was alluded to in original Claim 1 and indicate that the Ge-containing layer is the uppermost layer of the wafer, i.e., the layer in which devices will be formed.

Since the above amendments to Claim 1 do not introduce new matter into the specification of the present application, entry thereof is respectfully requested.

In view of the above amendments and remarks, the rejection under 35 U.S.C. §112, first paragraph, has been obviated. Reconsideration and withdrawal thereof are thus respectfully requested.

Claims 1, 3, 4, 5, 11, 12 and 14 stand rejected under 35 U.S.C. § 102(a) as allegedly anticipated by U.S. Patent No. 6,633,066 to Bae, et al. ("Bae, et al."). Claims 1, 3, 4, 6, 7, 11 and 12 stand rejected under 35 U.S.C. § 102(b) as allegedly anticipated by U.S. Patent No. 5,906,951 to Chu, et al. ("Chu, et al."). Claims 1, 3, 4, 6, 7, 11, 12, 13 and 19-32 stand rejected under 35 U.S.C. § 102(e) as allegedly anticipated by U.S. Patent No. 6,677,655 to Fitzgerald, et al. ("Fitzgerald, et al.").

Concerning the § 102 rejections, it is axiomatic that anticipation under § 102 requires that the prior art reference disclose each and every element of the claim to which it is applied. In re King, 801 F.2d, 1324, 1326, 231 USPQ 136, 138 (Fed. Cir. 1996). Thus, there must be no differences between the subject matter of the claim and the disclosure of the prior art reference. Stated another way, the reference must contain within its four corners adequate direction to practice the invention as claimed. The corollary of the rule is equally applicable: Absence from the applied reference of any claimed element negates anticipation. Kloster Speedsteel AB v. Crucible Inc., 793 F.2d 1565, 1571, 230 USPQ 81, 84 (Fed. Cir. 1986).

Applicants respectfully submit that the claims of the present application are not anticipated by the disclosure of Bae, et al. since the applied reference does not disclose applicants' claimed structure recited in amended Claim 1. Specifically, Bae, et al. do not disclose a semiconductor wafer that includes a semiconducting or non-semiconducting substrate; a buried insulator layer located on an upper surface of the substrate; an intermediate adhesion

layer located on an upper surface the buried insulator layer; and a Ge-containing layer located on an upper surface of the intermediate adhesion layer, *wherein said intermediate adhesion layer provides a bond between said buried insulator layer and said Ge-containing layer and eliminates Ge-oxide from said wafer and said Ge-containing layer represents the uppermost layer of the wafer.*

Bae, et al. disclose a method and structure consisting of an epitaxial Si (14)/SiGe (16)/Si (18) tri-layer film that is bonded and transferred to an oxide (22) located on the surface of a supporting substrate (20). This process is illustrated in FIGS 3A-3E or 4A-4E of the applied reference. Bae, et al. provides a substrate in which the Ge-containing layer 16 is buried beneath an unstrained Si layer 14. As such, the prior art substrate does not include a Ge-containing layer as the uppermost layer thereof. In the claimed invention, the Ge-containing layer represents the uppermost layer of the substrate and, as such, devices are formed on the Ge-containing layer, while in the prior art the devices are formed on the unstrained Si layer.

In view of the above remarks, the anticipation rejection based on the disclosure of Bae, et al. has been obviated. Applicants thus respectfully request reconsideration and withdrawal of the rejection under 35 U.S.C. § 102(a) citing Bae, et al.

Concerning the anticipation rejection citing Chu, et al., applicants respectfully submit that the claims of the present application are not anticipated by the disclosure of Chu, et al. since the applied reference does not disclose applicants' claimed structure which includes a semiconducting or non-semiconducting substrate; a buried insulator layer located on an upper surface of the substrate; an intermediate adhesion layer located on an upper surface the buried insulator layer; and a Ge-containing layer located on an upper surface of the intermediate adhesion layer, *wherein said intermediate adhesion layer provides a bond between said buried*

insulator layer and said Ge-containing layer and eliminates Ge-oxide from said wafer and said Ge-containing layer represents the uppermost layer of the wafer.

Chu, et al. provide an SOI substrate and a method of fabricating the same. In accordance with the disclosure of Chu, et al., strained layers of Si and/or SiGe are first formed on a first substrate. Next, a layer of Si and/or SiO₂ is formed over the strained layers. A second substrate having an insulating layer on its upper surface is then bonded to the Si or SiO₂ layer that is present in the first substrate. Thereafter, the first substrate is removed.

As with Bae, et al., Chu, et al. disclose a substrate in which a Si or SiGeO₂ layer represents the uppermost layer of the substrate. In one embodiment of Chu, et al., a p⁺⁺-doped SiGe is used as the uppermost layer of the substrate, but such a substrate differs from the claimed invention inasmuch the prior art structure does not include an intermediate adhesion layer which provides a bond between said buried insulator layer and said uppermost Ge-containing layer, as presently claimed.

In view of the above remarks, the anticipation rejection based on the disclosure of Chu, et al. has been obviated. Applicants thus respectfully request reconsideration and withdrawal of the rejection under 35 U.S.C. § 102(b) citing Chu, et al.

With respect to Fitzgerald, applicants respectfully submit that the claims of the present application are not anticipated by the disclosure of Fitzgerald. since the applied reference does not disclose applicants' claimed structure as recited in amended Claim 1.

In accordance with Fitzgerald, a structure with an optically active layer is embedded in Si. As such, the uppermost layer of the structure includes Si, whereas in the claimed invention the uppermost layer of the substrate includes a Ge-containing layer.

In view of the above remarks, the anticipation rejection based on the disclosure of Fitzgerald has been obviated. Applicants thus respectfully request reconsideration and withdrawal of the rejection under 35 U.S.C. § 102(e) citing Fitzgerald.

The foregoing remarks clearly demonstrate that the applied references do not teach each and every aspect of the claimed invention, as required by King and Kloster Speedsteel; therefore the claims of the present application are not anticipated by the disclosures of Bae, et al., Chu, et al. and Fitzgerald. Applicants respectfully submit that the instant § 102 rejections have been obviated and withdrawal thereof is respectfully requested.

Thus, in view of the foregoing amendments and remarks, it is firmly believed that the present case is in condition for allowance, which action is earnestly solicited.

Respectfully submitted,


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